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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Docket No. Q61225

Akira OOSAWA

Appln. No. 09/774,577

Group Art Unit: 2625

Confirmation No. 5559

Examiner: Seyed H. Azarian

Filed: February 1, 2001

For: INTER-IMAGE OPERATION APPARATUS AND METHOD AND IMAGE DISPLAY
APPARATUS AND METHOD

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

Table of Contents

I.	REAL PARTY IN INTEREST	2
II.	RELATED APPEALS AND INTERFERENCES.....	3
III.	STATUS OF CLAIMS	4
IV.	STATUS OF AMENDMENTS	5
V.	SUMMARY OF THE CLAIMED SUBJECT MATTER	6
VI.	GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL	12
VII.	ARGUMENT	13
	CLAIMS APPENDIX.....	21
	EVIDENCE APPENDIX.....	38
	RELATED PROCEEDINGS APPENDIX	39

I. REAL PARTY IN INTEREST

The real party in interest is Fuji Photo Film Co., Ltd., the assignee of the present application. The assignment was recorded on February 1, 2001, at Reel No. 011528, Frame No. 0314.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representatives, and the assignee of the present application are not aware of any other prior or pending appeals, interferences, or judicial proceedings which may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-69 are currently pending in the present application.

Claims 1-69 stand rejected.

IV. STATUS OF AMENDMENTS

An Amendment under 37 C.F.R. § 1.111 was filed and entered (as indicated in the final Office Action dated August 11, 2004) in response to the non-final Office Action dated January 21, 2004. In that Amendment, claims 65-69 were added. No amendments were made in responding to the final Office Action dated August 11, 2004.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellant's invention relates to a method and apparatus for inter-image operations and to a method and apparatus for displaying an image obtained through the inter-image method. According to the present invention, two or more sets of base image data, which each represent a distinct base image of a single object, are compared and subjected to inter-image processing.¹

Inter-image processing is often used in the medical field as a way for doctors to follow the progress of a disease or stages of a cure in a patient by comparing a number of images of the same part of a patient taken at different points in time. In order to enhance the differences between the images and to facilitate a physician's understanding of a patient's progress, inter-image operations, including subtraction operations, may be performed on base images of the patient.² Such inter-image operations enhance the differences between the base images and ensure that these differences are less likely to be overlooked by the physician.³ Unfortunately, such inter-image operations are often time-consuming and repeating such operations each time a physician wants to analyze the base images may be an obstacle to an efficient diagnosis.⁴ Therefore, one of the goals recognized and attained by Appellant's claimed invention is that of

¹ Specification, p. 1, lns. 7-19.

² P. 2, lns. 6-11.

³ *Id.*

⁴ P. 2, lns. 14-22.

improving the efficiency of outputting a processed image obtained through an inter-image operation performed between two or more base images of a single object.

According to Appellant's invention, a network (e.g. network 100 of Figure 1) is provided. Connected to the network are one or more image-generating apparatuses for generating images; an inter-image operation apparatus (e.g. inter-image operation apparatus 10 of Figure 1); a database server (e.g. database server 70 of Figure 1); an image display apparatus (e.g. image display apparatus 20 of Figure 1); and a printer (e.g. printer 30, as shown in Figure 1).⁵

Examples of image-generating apparatuses include a computerized tomography (CT) apparatus and a magnetic resonance imaging (MRI) apparatus, as shown in Figure 1.⁶ The image-generating apparatuses generate base images of an object. Each set of base image data represents a distinct base image of a single object, for example a MRI of a patient's chest. Sets of base image data may correspond to radiation images of a patient taken with different energy distributions or taken at different points in time.⁷ However, the object of the images is not limited to human patients, and the images are not limited to radiation images.⁸

The inter-image operation apparatus may include inter-image operations means (e.g. temporal subtraction means 11 of Figure 1) and history data recording means (e.g. history data

⁵ P. 15, ln. 7 - p. 16, ln. 2; Figure 1.

⁶ P. 15, lns. 11-15.

⁷ P. 5, lns. 4-14.

⁸ P. 4, lns. 13-23.

recording means 12 of Figure 1).² The inter-image operation means performs inter-image operations on two or more sets of base image data resulting in processed image data. In other words, the inter-image operations means compares two or more base images and outputs comparison data. The inter-image operation may be a subtraction operation or a weighted subtraction operation performed on the sets of base image data on a pixel-by-pixel basis.¹⁰ Thus, the resultant processed image data may be an energy subtraction image derived through a simple subtraction operation or a weighted subtraction image derived through a weighted subtraction operation between two original radiation images taken at substantially the same point in time but with different energy distributions. A subtraction image may also be a temporal subtraction image derived from two original images taken at different points in time, or a digital subtraction angiography image derived from two original images of certain blood vessels taken before and after injection of a contrast medium.¹¹ Such processed image data may thereby highlight those portions of a patient which differ between two images which may represent new growth or the spread of a disease.

The history data recording means, such as means 12 of Figure 1, records history data corresponding to the inter-image operation performed by the inter-image operation means.¹² In

² P. 15, lns. 20-26 and p. 17, ln. 12-14.

¹⁰ P. 4, ln. 24 - p. 5, ln. 2.

¹¹ P. 5, lns. 4-17.

¹² P. 17, lns. 12-14.

other words, the history data recording means stores history data in the database server 70. The history data may be recorded separately, may be attached to the processed image data resultant from the inter-image operation, or may be attached to each of the two or more sets of base image data used in the inter-image operation.¹³

The history data may include: data indicating whether or not processed image data corresponding to a particular inter-image operation has already been obtained; information on recording sites of previously-processed image data; information identifying base images; information identifying previously-processed image data; details of previously-performed inter-image operations; details of post-processing; and information corresponding to a number or details of a series of processed images.¹⁴ Information identifying the base images may include file names for the two or more sets of base image data, a patient name or names, a date or dates on which the two or more base images were taken, or an ID number or name identifying an imaged portion of a patient.¹⁵ Information identifying previously-obtained processed image data may include a name or file name corresponding to the processed image data, a patient name or names, a date or dates on which the processed image data was obtained, and an ID number or name identifying an imaged portion of a patient.¹⁶ For example, where the set of base images

¹³ P. 6, lns. 5-12.

¹⁴ P. 9, ln. 9 - p. 10, ln. 12.

¹⁵ P. 9, lns. 12-17.

¹⁶ P. 9, lns. 18-22.

includes two temporally-spaced MRI images of a patient's lungs, the history data may include the file names and locations of the base images and of a subtraction image, the name of the patient, the dates and times at which the base images were taken and at which a subtraction image was processed, and the angle at which the base images were taken.

Once history data on past inter-image operations has been recorded, it may then be recalled and referred to. Thus, if processed image data derived from specified base images is desired, and the data on past inter-image operations indicates that such processed image data has already been obtained, the previously-processed image data can be recalled and displayed or printed rather than performing another inter-image operation on the specified base images. Thus, when a request for performing an inter-image operation on particular base images is received by the inter-image operation means, the inter-image operations means can search through the history data stored in the database server and determine if the requested inter-image operation has already been performed. Based on the stored history data, if the requested inter-image operation has already been performed, the previously-obtained processed image data can be retrieved from the database server rather than re-processed.

The printer and the image display apparatus may be used to print or display the base images and/or a processed image resultant from inter-image processing of base images. According to exemplary embodiments of Appellant's claimed invention, the image display apparatus may display the processed image together with the two or more base images used to form the processed image, such as, for example, file names, the location(s) at which the images

are stored/saved, the name(s) of patients, and the time period during which the base images were obtained.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejection of claims 1, 3-5, 7-9, 11-13, 15-17, 19-21, 23-24, 32, 34-36, 38-40, 42-44, 46-48, 50-52, 54, 55, 63-64, 65, and 67-69 under 35 U.S.C. § 102(b) as allegedly anticipated by Kano et al., U.S. Patent No. 5,359,513 (“Kano”) and the rejection of claims 2, 6, 10, 14, 18, 22, 25-31, 33, 37, 41, 45, 49, 53, 56-62, and 66 under 35 U.S.C. § 103(a) as allegedly unpatentable over Kano, in view of Lemelson et al., U.S. Patent No. 5,878,746 (“Lemelson”), is to be reviewed on appeal.

VII. ARGUMENT

A. Claims 1, 3-5, 7-9, 11-13, 15-17, 19-21, 23-24, 32, 34-36, 38-40, 42-44, 46-48, 50-52, 54, 55, 63-64, 65, and 67-69 over Kano

Claims 1, 3-5, 7-9, 11-13, 15-17, 19-21, 23-24, 32, 34-36, 38-40, 42-44, 46-48, 50-52, 54, 55, 65, and 67-69

Kano fails to disclose or suggest all of the limitations recited in either of independent claims 1 or 32, finally rejected over Kano under 37 C.F.R. § 102(b).

Each of claims 1 and 32 require two discrete aspects. The first element requires carrying out an inter-image operation to obtain processed image data therefrom. The second element requires recording history on past inter-image operations. In the final Office Action, the Examiner relies on Figure 11A and col. 12, ln. 55 through col. 13, ln. 18 of Kano as disclosing this second element.¹⁷ However, Appellant submits that the cited portions of Kano merely describe the processing of image data through a mapping of shift values and the storing of the result of a subtraction calculator, and fail to disclose or suggest recording history data on past inter-image operations, as claimed.

Further, Appellant submits that the Examiner's argument that Kano's description of storing the result of the subtraction calculator device 210 in memory 220 anticipates the claimed limitation of "recording history data on past inter-image operations" ignores the phrase "history data," as recited in claims 1 and 32. In other words, the Examiner focuses solely on the storing of

¹⁷ Final Office Action, August 11, 2004, p. 2.

a subtraction image and not on any history data related thereto. Appellant submits that “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,”¹⁸ and that “All words in a claim must be considered in judging the patentability of that claim against the prior art.”¹⁹ Therefore, the Examiner must consider the above-noted claim limitation as a whole, including the phrase “history data.”

For at least the reasons presented above, Appellant submits that Kano fails to anticipate the present invention as recited in claims 1 and 32 and that dependent claims 3-5, 7-0, 11-13, 15-17, 19-21, 23-24, 34-36, 38-40, 42-44, 46-48, 50-52, 54, 55, 65, and 67-69 are patentable at least by virtue of their dependence on claims 1 and 32.

Claims 3-4, 7-8, 11-12, 15-16, 19-20, 23-24, 34-35, 38-39, 42-43, 46-47, 50-51, and 54-55

In addition to the above, with respect to claims 3, 7, 11, 15, 19, 23, 34, 38, 42, 46, 50, and 54, Appellant submits that Kano fails to disclose or suggest “wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation,” as claimed. With respect to claims 4, 8, 12, 16, 20, 24, 35, 39, 43, 47, 51, and 55, Kano fails to disclose or suggest “wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the

¹⁸ *Verdegaal Bros. v. Union Oil Co. of California*, 814, F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

¹⁹ *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

processed image data," as claimed. In the final Office Action, the Examiner refers to col. 4, lns. 57-68 ("a pair of first and second images (step 10; 20), image registration and then subtraction") and col. 5, lns. 34-47 as disclosing these limitations.²⁰

Contrary to the assertion of the Examiner, however, and as discussed above with respect to claims 1 and 32, *all* words in a claim must be considered in judging the patentability of that claims. At most, the cited portions of Kano describe digitizing a pair of images, registering the images, mapping shift values, and subtracting the images. As discussed above with respect to claims 1 and 32, Kano fails to disclose or suggest recording history data on past inter-image operations. Further, there is no disclosure in the cited portion of Kano or anywhere else in the reference of attaching any information to processed image data or to each of two or more sets of base image data, as claimed.

For at least the reasons presented above, Appellant submits that Kano fails to anticipate the present invention as recited in claims 3-4, 7-8, 11-12, 15-16, 19-20, 23-24, 34-35, 38-39, 42-43, 46-47, 50-51, and 54-55.

Claims 5 and 36

In addition to the above, with respect to claims 5 and 36, Kano fails to disclose or suggest "wherein the history data on past inter-image operations include information identifying the base images each represented by one of said two or more sets of the base image data used for calculating the processed image data," as claimed. Appellant notes that col. 5, lns. 1-22, referred

²⁰ Final Office Action, August 11, 2004, p. 5.

to by the Examiner²¹ discloses digitizing images, selecting ROIs, image registration, non-linear warping, subtraction, and viewing by a radiologist. However, neither this section, nor any other section of Kano discloses or suggests history data including information identifying base images, as claimed. Further, in the final Office Action, contrary to the requirements of MPEP §707.07(f)²², the Examiner fails to respond to these arguments, previously presented in Appellant's May 18 Amendment under 37 C.F.R. § 1.111, but rather merely repeats his argument verbatim. Accordingly, Appellant submits that the Examiner's arguments and rejection with respect to claims 5 and 36 remain rebutted.

For at least the reasons presented above, Appellant submits that Kano fails to anticipate the present invention as recited in claims 5 and 36.

Claims 9, 17, 40, and 48

In addition to the above, with respect to claims 9, 17, 40, and 48, Kano fails to disclose or suggest "wherein the history data on past inter-image operations include such data indicating whether or not the processed image data on certain processed images have already been obtained," as claimed. Again, contrary to the requirements of MPEP §707.07(f), in the final Office Action the Examiner fails to respond to Appellant's arguments relating to this limitation, presented in Appellant's May 18 Amendment. Appellant submits that col. 5, lns. 24-33 and col.

²¹ Final Office Action, August 11, 2004, p. 5.

²² "Where the Appellant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the Appellant's argument and answer the substance of it."

8, lns. 59-66, referred to by the Examiner as disclosing this limitation²³, disclose “matching between each corresponding pair of ROIs and comparing the result,” and that “best match location are selected to perform a fine search for local matching in the second step for accuracy.” However, neither of these sections of Kano, nor any other section of Kano, disclose or suggest anything relating to history data or to history date including whether or not processed image data has already been obtained. Therefore, due to the Examiner’s failure to respond, Appellants submit that these rejections remain rebutted.

For at least the reasons presented above, Appellant submits that Kano fails to anticipate the present invention as recited in claims 9, 17, 40, and 48.

Claims 13, 21, 44, and 52

In addition to the above, with respect to claims 13, 21, 44, and 52, Kano fails to disclose or suggest at least history data on past inter-image operations including information on recording sites of the processed inter-image data and fetching the processed inter-image data, instead of conducting the inter-image operation anew, if it is found by referring to the history data that the desired set of processed image data has already been obtained, as claimed.

Again, contrary to the requirements of MPEP §707.07(f), the Examiner has failed to respond to Appellant’s arguments relating to this limitation.²⁴ Appellant submits that neither the

²³ First Office Action, January 21, 2004, p. 3; Final Office Action, August 11, 2004, p. 5.

²⁴ Appellant’s Amendment under 37 C.F.R. § 1.111, May 18, 2004.

cited portion of Kano²⁵, nor any other portion of Kano discloses or suggests history data, as discussed above, with respect to claims 1 and 32, or fetching and outputting stored processed image data if it is found, referring to history data, that the desired processed image data has already been obtained, as recited in claims 13, 21, 44, and 52. Therefore, as above, due to the Examiner's failure to respond, these rejections remain rebutted.

For at least the reasons presented above, Appellant submits that Kano fails to anticipate the present invention as recited in claims 13, 21, 44, and 52.

Claims 63 and 64

Regarding the Examiner's rejection of claims 63 and 64, Appellant submits that Kano fails to disclose or suggest at least "displaying information identifying two or more base images each represented by one of said two or more sets of the base image data together with the processed image." With respect to this limitation, the Examiner asserts that the original images, displayed along with the subtraction images of Kano, are "information identifying two or more base images," as claimed. However, Appellant notes that a claims is only anticipated if each and every limitation of the claims is found in the prior art reference.²⁶ Appellant submits that claims 63 and 64 recite "*displaying information identifying the two or more base images*," rather than merely reciting "displaying the two or more base images." Appellant notes that the Examiner

²⁵ Col. 12, lns. 55-68, First Office Action, January 21, 2004, p. 4; Final Office Action, August 11, 2004, p. 6.

²⁶ *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

appears to ignore the actual claim language in favor of a broader interpretation including only the display of the subtraction images. However, Kano fails to disclose or suggest the actual claimed limitation of “displaying *information identifying the two or more base images* each represented by one of said two or more sets of the base image data together with the processed image.” As explained in the specification, the referent of the claimed phrase as recited in claims 63 and 64 is information that specifies which images were employed in the inter-image processing.²⁷ For example, the information identifying the two or more base images may include, but is not limited to, file names, the location(s) at which the images are stored/saved, the names of patients, and time periods during which the images were obtained. Thus, the information identifying the two or more images comprises data *other than* the images themselves.

For at least the reasons presented above, Appellant submits that Kano fails to disclose or suggest “displaying information identifying the two or more base images each represented by one of said two or more sets of the base image data together with the processed image,” as recited in claims 63 and 64, and therefore, that Kano fails to anticipate the present invention as recited in claims 63 and 64.

B. Claims 2, 6, 10, 14, 18, 22, 25-31, 33, 37, 41, 45, 49, 53, 56-62, and 66 over Kano and Lemelson

Regarding the standing rejection of claims 2, 6, 10, 14, 18, 22, 25-31, 33, 37, 41, 45, 49, 53, 56-62, and 66 over Kano and Lemelson, Appellant submits that Lemelson fails to remedy the

²⁷ See e.g. Specification, p. 13-14 and 20.

above-discussed deficiencies of Kano, and therefore, these claims are patentable at least by virtue of their dependence on claims 1 and 32.

C. Conclusion

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS 1-69 ON APPEAL:

1. (rejected): An inter-image operation method comprising the steps of carrying out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object to obtain processed image data therefrom, and recording history data on past inter-image operations.

2. (rejected): An inter-image operation method according to claim 1, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

3. (rejected): An inter-image operation method according to claim 1, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

4. (rejected): An inter-image operation method according to claim 1, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

5. (rejected): An inter-image operation method according to claim 1, wherein the history data on the past inter-image operations include information identifying the base images each represented by one of said two or more sets of the base image data used for calculating the processed image data.

6. (rejected): An inter-image operation method according to claim 5, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

7. (rejected): An inter-image operation method according to claim 5, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

8. (rejected): An inter-image operation method according to claim 5, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

9. (rejected): An inter-image operation method according to claim 1, wherein the history data on the past inter-image operations include such data indicating whether or not the processed image data on a certain processed image have already been obtained.

10. (rejected): An inter-image operation method according to claim 9, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

11. (rejected): An inter-image operation method according to claim 9, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

12. (rejected): An inter-image operation method according to claim 9, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

13. (rejected): An inter-image operation method according to claim 9, wherein the history data on the past inter-image operations include information on recording sites of the processed image data obtained in the past, and wherein a desired set of the processed image data stored at the recording site thereof is fetched and outputted instead of conducting the inter-image operation to recalculate the desired set of the processed image data, if it was found by referring to the history data that the desired set of processed image data had already been obtained.

14. (rejected): An inter-image operation method according to claim 13, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

15. (rejected): An inter-image operation method according to claim 13, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

16. (rejected): An inter-image operation method according to claim 13, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

17. (rejected): An inter-image operation method according to claim 5, wherein the history data on the past inter-image operations include such data indicating whether or not the processed image data on a certain processed image have already been obtained.

18. (rejected): An inter-image operation method according to claim 17, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

19. (rejected): An inter-image operation method according to claim 17, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

20. (rejected): An inter-image operation method according to claim 17, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

21. (rejected): An inter-image operation method according to claim 17, wherein the history data on the past inter-image operations include information on recording sites of the processed image data obtained in the past, and wherein a desired set of the processed image data stored at the recording site thereof is fetched and outputted instead of conducting the inter-image operation to recalculate the desired set of the processed image data, if it was found by referring to the history data that the desired set of processed image data had already been obtained.

22. (rejected): An inter-image operation method according to claim 21, wherein the history data on the past inter-image operations are recorded in a designated recording medium.

23. (rejected): An inter-image operation method according to claim 21, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation.

24. (rejected): An inter-image operation method according to claim 21, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data.

25. (rejected): An inter-image operation method according to any one of claims 1-24, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data.

26. (rejected): An inter-image operation method according to any one of claims 1-24, wherein each of said two or more sets of the base image data is a set of data representing an original image.

27. (rejected): An inter-image operation method according to any one of claims 1-24, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis

between said two or more sets of the base image data, and wherein each of said two or more sets of the base image data is a set of data representing an original image.

28. (rejected): An inter-image operation method according to any one of claims 1-24, wherein the base images each represented by one of said two or more sets of the base image data are taken at different points in time.

29. (rejected): An inter-image operation method according to any one of claims 1-24, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data, and wherein the base images each represented by one of said two or more sets of the base image data are taken at different points in time.

30. (rejected): An inter-image operation method according to any one of claims 1-24, wherein each of said two or more sets of the base image data represents a radiation image for medical use.

31. (rejected): An inter-image operation method according to any one of claims 1-24, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis

between said two or more sets of the base image data, and wherein each of said two or more sets of the base image data represents a radiation image for medical use.

32. (rejected): An inter-image operation apparatus comprising inter-image operation means which carries out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object to obtain processed image data therefrom, and history data recording means for recording history data on past inter-image operations.

33. (rejected): An inter-image operation apparatus according to claim 32, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

34. (rejected): An inter-image operation apparatus according to claim 32, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

35. (rejected): An inter-image operation apparatus according to claim 32, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

36. (rejected): An inter-image operation apparatus according to claim 32, wherein the history data on the past inter-image operations include information identifying the base images each represented by one of said two or more sets of the base image data used for calculating the processed image data.

37. (rejected): An inter-image operation apparatus according to claim 36, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

38. (rejected): An inter-image operation apparatus according to claim 36, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

39. (rejected): An inter-image operation apparatus according to claim 36, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

40. (rejected): An inter-image operation apparatus according to claim 32, wherein the history data on the past inter-image operations include such data indicating whether or not the processed image data on a certain processed image have already been obtained.

41. (rejected): An inter-image operation apparatus according to claim 40, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

42. (rejected): An inter-image operation apparatus according to claim 40, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

43. (rejected): An inter-image operation apparatus according to claim 40, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

44. (rejected): An inter-image operation apparatus according to claim 40, wherein the history data on the past inter-image operations include information on recording sites of the processed image data obtained in the past, and wherein a desired set of the processed image data stored at the recording site thereof is fetched and outputted instead of conducting the inter-image operation to recalculate the desired set of the processed image data, if the inter-image operation means found by referring to the history data, that the desired set of processed image data had already been obtained.

45. (rejected): An inter-image operation apparatus according to claim 44, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

46. (rejected): An inter-image operation apparatus according to claim 44, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

47. (rejected): An inter-image operation apparatus according to claim 44, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

48. (rejected): An inter-image operation apparatus according to claim 36, wherein the history data on the past inter-image operations include such data indicating whether or not the processed image data on a certain processed image have already been obtained.

49. (rejected): An inter-image operation apparatus according to claim 48, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

50. (rejected): An inter-image operation apparatus according to claim 48, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

51. (rejected): An inter-image operation apparatus according to claim 48, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

52. (rejected): An inter-image operation apparatus according to claim 48, wherein the history data on the past inter-image operations include information on recording sites of the processed image data obtained in the past, and wherein a desired set of the processed image data stored at the recording site thereof is fetched and outputted instead of conducting the inter-image operation to recalculate the desired set of the processed image data, if the inter-image operation means found by referring to the history data that the desired set of processed image data had already been obtained.

53. (rejected): An inter-image operation apparatus according to claim 52, wherein the history data recording means records the history data on the past inter-image operations in a designated recording medium.

54. (rejected): An inter-image operation apparatus according to claim 52, wherein the history data recording means attaches the history data on the past inter-image operations to the processed image data obtained through the inter-image operation.

55. (rejected): An inter-image operation apparatus according to claim 52, wherein the history data recording means attaches the history data on the past inter-image operations to each of said two or more sets of the base image data used for calculating the processed image data.

56. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data.

57. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein each of said two or more sets of the base image data is a set of data representing an original image.

58. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data, and wherein each of said two or more sets of the base image data is a set of data representing an original image.

59. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein the base images each represented by one of said two or more sets of the base image data are taken at different points in time.

60. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data, and wherein the base images each represented by one of said two or more sets of the base image data are taken at different points in time.

61. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein each of said two or more sets of the base image data represents a radiation image for medical use.

62. (rejected): An inter-image operation apparatus according to any one of claims 32-55, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data, and wherein each of said two or more sets of the base image data represents a radiation image for medical use.

63. (rejected): An image display method comprising the steps of displaying an image on a prescribed image display, said image being a processed image represented by processed image data obtained by carrying out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object, and displaying information identifying the two or more base images each represented by one of said two or more sets of the base image data together with the processed image.

64. (rejected): An image display apparatus comprising means for displaying an image on a prescribed image display, said image being a processed image represented by processed image data obtained by carrying out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object, and means for displaying information identifying the two or more base images each represented by one of said two or more sets of the base image data together with the processed image.

65. (rejected): The apparatus of claim 32, wherein the history data recording means comprises a database which stores the history data and the base image data.

66. (rejected): The apparatus of claim 32, wherein the history data comprises at least one of: data indicating whether or not inter-image operations of the base image data have been

carried out, names for the base image data, a name of a patient of corresponding base image data, a date of taking the base image data, and an ID number of the patient.

67. (rejected): The apparatus of claim 65 wherein the history data includes header information indicating that inter-image operation of the base image data has been carried out.

68. (rejected): The apparatus of claim 67, wherein the inter-image operation means searches the database by the header information to determine whether the inter-image operation has been carried out, and retrieving the inter-image operation from the database when the header information that the inter-image operation has been carried out to provide the processed image data.

69. (rejected): The apparatus of claim 68, wherein the inter-image operation means carries out the inter-image operation when the inter-image operation of the base image data has not been previously carried out.

APPELLANT'S APPEAL BRIEF UNDER 37 C.F.R. § 41.37
U.S. Application No. 09/774,577

Q61225

EVIDENCE APPENDIX:

-----NONE-----

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U.S. Application No. 09/774,577

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RELATED PROCEEDINGS APPENDIX

-----NONE-----